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BRAZILIAN COTTON PICKER

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FRONT COVER

Brazilian Cotton Picker

United States cotton faces renewed competition as production abroad again trends upward after its long wartime decline. (Photo courtesy of Theodor Preising.)

BACK COVER

Quantity Index of United States Agricultural Exports

The current trend for most United States agricultural exports is downward.

Credit for photographs is given as follows: pp. 32, 33, Luther J. Piekerel; p. 35, BPISAE; pp. 37, 38, Foto-Biener, Guatemala; pp. 39, 40, BE&PQ; p. 47, Fennia Kuva, Helsinki.

NEWS NOTES

Mr. Bush Heads OFAR's Latin American Branch

Guy L. Bush, for the past 6 years Agricultural Attaché in Rio de Janeiro, Brazil, recently joined the Office of Foreign Agricultural Relations Washington staff as head of its Latin American Branch. Before he went to Brazil, Mr. Bush directed the information program of the Agricultural Adjustment Administration in the States administered from the regional office at Denver.

Far East Grain Mission Will Return Soon

The Far East Grain Mission, which has spent the past 3 months in the Orient, is scheduled to return to the United States this month. The Mission was sent to the Far East on recommendation of the Grain Advisory Committee, Research and Marketing Act, to make a survey of market potentialities for United States grain and grain products, including grain sorghums, in the countries of that area.

Membership of the Mission consists of E. J. Bell, administrator of the Oregon Wheat Commission and project leader; A. M. Camp, wheat producer and President of the North Pacific Grain Growers; and Henry A. Bachr, Cereals Chemist and Marketing Specialist of the United States Department of Agriculture.

Dr. Gardner Goes to Colombia

Dr. Victor R. Gardner, Director of the Michigan Agricultural Experiment Station, will go to Bogotá, Colombia this month, where he will be research adviser to the Ministry of Agriculture and to the Colombia Federation of Coffee Growers for the next year.

FOREIGN AGRICULTURE

ALICE I. FRAY, EDITOR

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Outlook for United States Agricultural Exports^{*}

by J. H. RICHTER



The large United States exports of agricultural products since the war have depended to a very high degree upon the financial aid that this country extends to foreign nations. Since there is little prospect for an easing of the so-called dollar shortage through other sources, the future of these exports will be greatly affected by the continued flow of American aid. That flow is now on the down grade, while agricultural production abroad is rising. We are, therefore, faced with a general situation that foreshadows a decline in foreign demand, especially in the more distant future. The value of United States agricultural exports is likely to continue high in 1949-50 and 1950-51 but in all probability will be lower than in 1948-49.

This is the proposition that will be developed in the following remarks. Before we go into the matter, however, we should remember that, in any attempt at prediction, the economist today must contend with the inception and operation of policies that are, to some extent and over a period of time, autonomous factors in determining economic developments. Economic analysis alone cannot predict the behavior of governments in these respects. All it can do is reveal some of the economic forces that have a bearing upon such measures. The policies and actions of governments and individuals are not altogether arbitrary, however, at least not in that part of the world that pursues economic activity to economic and social ends. In the long run, policies and actions tend to follow the dictates of the hard facts and circumstances with which they must cope. Our crystal gazing may, therefore, be made somewhat less speculative and haphazard if we try to appraise some of these facts and circumstances.

Prospects for Total Exports

Total dollar expenditure by foreign countries in the United States depends on the supply of dollars or

gold that they can and are willing to draw upon. It is true that not all of this expenditure goes for purchases in the United States since there are some other areas where buying is also done against dollars or gold. Unless these areas accumulate dollar balances or gold, however, such funds will indirectly flow into the United States as immediately effective buying power. For all practical purposes dollar disbursements by foreign countries that end up in accumulation of gold or dollar balances by other foreign countries may be expected to remain constant, that is, at the present rate, for some time to come.

If we assume this, it will be seen that the foreign buying power for American goods and services during the next 18 months may be expected to continue at the same rate as, say, in the past year, plus or minus any changes in dollar earnings abroad, or any changes in disbursements from dollar loans or grants to foreign countries, or any changes in the liquidation for dollars of foreign assets or of gold.

With respect to the liquidation for dollars or gold of foreign assets, it is probable that the rate of such liquidation in the next 18 months will decline. Since the war these assets have been drawn down considerably and what remains does not allow much further liquidation. Disbursements from grants and loans by the United States in 1949-50 will still be above 1948-49—at a rate declining through the year; in 1950-51 such disbursements will almost certainly be much below either 1948-49 or 1949-50. In this appraisal, consideration has been given not only to the declining appropriations under the European Recovery Program but also to the prospective level of any other loans or grants, by United States or international agencies, and to the inception of the military-aid program for Western Europe. While disbursements under the latter program will be principally for military equipment additional to previous dollar procurement of such supplies, it may release a small

^{*}Text of address delivered by Dr. Richter at the 27th Annual Agricultural Outlook Conference.

Dr. Richter is Head, European Division, Regional Investigations Branch, OFAR.

amount of other dollar purchasing power for civilian purposes.

As to the dollar earnings by foreign nations, it is doubtful whether they will increase in the near future, even though the recent devaluations will make foreign services and manufactured goods more competitive than they otherwise would be. In any case, if there were to be an increase in dollar earnings it would probably be slight.

Smaller liquidation of gold and dollar assets and, later, also a net decline in the disbursements of dollar grants and loans, probably not offset by larger dollar earnings—this, then, would seem to picture the outlook for the development of dollar purchasing power for United States exports of goods and services for civilian purposes.

Barring a fundamental change in policies, our first general conclusion would thus be that the expenditure by foreign countries on imports from the United States in 1950 and 1951 will decline.

There is nothing startling in this expectation. It could be altered only by the assumption of policies on the part of the United States as well as the rest of the world that are not likely to be adopted. One would be the continuance, to an unchanged or even increased extent, of United States grants and loans, be it directly or through the channels of international agencies and actions.

If, however, the world is to make progress toward the presumed goal of eliminating the grave imbalance that now exists in international economic relations, the countries that at present rely so heavily on foreign aid will have to take measures to sustain themselves without extraordinary financial assistance from abroad. They can do this only by increasing their productivity or by lowering their standards of living. The recent currency devaluations prepare the way for steps in both directions. Both imply intensified competition for American producers—within those countries, or in the United States, or in third markets; hence, they also imply larger general imports or reduced general exports by the United States or both.

Prospects for Agricultural Exports

Descending from the general to the specific, it is at once clear that the difficulties in appraising the outlook multiply when we turn from a consideration of prospective foreign expenditures on American exports in general to expenditures on American agricultural exports in particular.

Two things, however, follow directly from the

premises previously discussed. First, that expenditure on the importation of United States agricultural products will operate within the framework of smaller total dollar expenditure. Second, if total foreign expenditure of dollars in United States markets declines, the products that are less necessary under a declining standard of living, or less necessary for increasing productivity, will have a relatively low priority.

Conversely, the basic commodities, including agricultural, will be more prominently stressed in the purchases from the United States by countries that must retrench their general dollar expenditure. To some extent, and with respect to some commodities, priorities may be modified by special actions, as we shall see. But basically these priorities will be of great influence.

In considering the specific outlook for foreign expenditure on agricultural commodities from the United States let us be quite clear about the anomalous character of the great expansion in American agricultural exports during and after World War II. The anomaly, which may be seen both in the total volume of such exports and in their composition, is, of course, due to the effects and aftereffects of the war. The total value of American agricultural exports in 1946–47 to 1948–49 was about 4.5 times the average 1930–31 to 1938–39. The volume of these exports, measured by a quantity index that eliminates the change in prices, was up by about 50 percent. At the same time, that increase was most unevenly distributed. Exports of tobacco after the war were somewhat above the prewar average; exports of fruits were three-fourths of prewar; cotton only one-half to two-thirds. On the other hand, exports of wheat and flour had risen to an average of 450 million bushels—or more than 6 times the 1930–38 average and 2.5 times the average of United States exports in the 5 years ending 1930–31. A substantial increase also took place in United States exports of grains other than wheat, of oilseeds, vegetable oils, lard, and dairy products. The determining influence of the effects of the war and its aftermath is quite obvious from these developments.

The increase in United States shipments of grain, fats and oils, oilseeds, and dairy products is due to the wartime and postwar declines in production and export supplies in Europe and the Far East. Some of these declines must be viewed as a passing phase. Others are likely to persist.

It is probable, for example, that export supplies of rice and fats from the former Far Eastern export territories will remain below prewar or that grain sur-

pluses from Eastern Europe will not regain their prewar importance.

With respect to cotton, some of the foreign exporters who during the war reduced their cotton output in favor of food crops are likely to recapture part of their former position. Moreover, the dollar shortage and trading arrangements of dollar-short countries favor cotton growing in colonial areas and elsewhere in the trading community of the soft-currency countries. Partly due to the same factor, synthetic fibers are rapidly gaining ground.

In view of the dollar shortage, the prospect for exports of fruits would be definitely unfavorable, were it not for special measures in their behalf.

Tobacco exports may be hoped to hold their own at present higher-than-prewar levels. Later they may recede to prewar quantities. In any case, they will be measurably below the high exports of the first two postwar seasons.

This general picture of the position of our agricultural exports after the war and a more detailed review of the factors that influenced the situation for individual commodities suggest the conclusion that the developments and conditions that have boosted our exports of some products are largely of a temporary nature, while those developments and conditions that have reduced our exports of other products, or make further reductions probable, bear a more permanent character.

Cereals

As the production of cereals in Europe and the Far East recovers further in the next several years, import requirements of these deficit areas will decline from the abnormally high levels of recent years. There should also be somewhat greater supplies from those areas that had larger export surpluses before the war—Argentina and Eastern Europe—since the whole situation exerts strong pressure toward greater exchange of Western Europe's industrial items for foodstuffs and feedstuffs of these surplus regions. Such developments will tend toward a gradual reduction in the requirement for grain from the United States.

It is unlikely, however, that these influences will lower drastically the exports of grain from the United States during the current or the next fiscal year.

First, the increase in production in the deficit countries will be slow and in some areas consumption is still likely to increase with the increase in production. Even when Western Europe reaches a per capita production equal to that before the war, imports—about

one-third of consumption—will still have to be larger than before the war, if consumption by the increased population is to be at the prewar per capita level.

Second, it is improbable that export supplies from Eastern Europe and from Far Eastern export areas will rapidly reach their prewar volume—possibly they never will. Japan and India will continue to depend on large imports from outside the Far Eastern area.

It is, therefore, probable that—with the high priority that grain imports have in the deficit countries—export sales of United States wheat and grain in general will continue on a large scale during 1949–50 and 1950–51, though probably at declining rates and below the record shipments of 1948–49. In a longer period ahead, United States exports of grain will probably decline further but they are likely to remain substantially above the small exports before the war.

Fats and Oils

Fats and oils continue to be in short supply in Europe and over most of the Far East. The increasing European output cannot keep pace with consumption needs. Even at the end of the ECA period, Western Europe expects to import more of these essential commodities than it takes at the present time. It is not unlikely, therefore, that for some time to come import buying by the deficit areas will continue at least at the present rate.

Among all foodstuffs, fats together with cereals will have the highest priority on dollar expenditure by the deficit countries. However, since local production as well as availabilities from soft-currency sources are on the increase, since stocks have been somewhat replenished in the past year or so, and since hard-currency funds must be carefully husbanded, it is probable that these countries will continue to show caution and selectivity in their purchases. Furthermore, European demand definitely favors oilseeds in preference to fats and oils as such, which will be of some influence in the direct export demand for American lard. Exports from the United States in 1950 of all fats and oils, including oilseeds, should not differ greatly from the elevated level of 1949, although they will probably be somewhat below that record year.

Cotton

The position of cotton exports at this time is particularly interesting, and to understand it we should perhaps recall the situation between the wars. Total imports of raw cotton by all importing countries in the second half of the 1930's were about the same as im-

ports in the first half. Takings from the United States in the latter half were displaced, to the extent of almost one-third, by larger supplies from Latin America—principally Brazil—and colonial Africa, and to some extent Egypt and India. During the first four postwar seasons, taken as a whole, the United States suffered a further set-back in its cotton export position that reduced exports to two-thirds of the 1934–38 average. This decline, however, was due to the lower level of world imports of raw cotton that also stood at about two-thirds of 1934–38 imports. Cotton exports from India and Pakistan, because of the basic decline in production concurrently with an expansion of mill consumption, fell to one-third of their prewar level. Exports from Egypt, where production during the war was also greatly reduced, likewise were below prewar.

On the other hand, cotton exports from Latin America and colonial Africa stood at or above prewar. Although relative prices accounted partly for this situation, it is also characteristic of the extent to which exports in these areas—largely from stocks that had accumulated—were favored by the dollar shortage of importing countries. Equally significant with respect to the effects of the dollar supply is the upsurge, in 1948–49, of American cotton exports, with the inception of United States dollar aid under the European Recovery Program. In that season, our exports rose to almost 5 million bales or little less than the 1934–38 average, even though total world imports of cotton remained 15 percent below prewar.

Mainly because of the relative scarcity of supplies from alternative sources and the high priority of cotton in the dollar allocations by importing countries, the outlook is for continuance of relatively large exports of United States cotton in 1949–50. It is improbable, however, that they will be maintained at the 1948–49 level.

Further ahead, the outlook for United States exports of raw cotton is by no means encouraging. The relative scarcity of supplies from nondollar sources should lead to ultimate reexpansion of production in some of these areas in which acreage and production are still reduced because of the previous shifts to other crops.

In India, larger textile consumption is to be based upon expansion of domestic cotton production. The country even hopes to enter the textile export market in Far Eastern areas. Plans are also under way to stimulate the production of cotton in Turkey and in the dependent overseas territories of Britain, France,

Belgium, and Portugal. There is a strong pressure on the dollar-short countries generally to channel their purchases of raw cotton so far as possible to nondollar areas.

In such circumstances—and while the dollar shortage is likely to persist—the United States position will be that a residual supplier. So far as is known, European countries are doubtful whether they can import, by 1952, more than three-fourths of the 4 million bales that they imported in the last prewar years. They also think that their need for fiber supplies, coupled with their inability to import more from hard-currency areas, will make it necessary to more than double the share of domestically produced synthetic fibers in their total fiber consumption. Prices of such fibers are already at a highly competitive level and expansion of productive capacity is under way.

There are, of course, factors on the other side of the ledger also, such as the persistence of lower per capita consumption of textiles in Europe and the Far East, which, coupled with the increases in population, sooner or later will call for larger raw-material supplies. Furthermore, in some cotton-producing countries, industrialization has been pushed forward and has entailed a scarcity of farm labor that will act as a brake on the extent of reexpansion—as is the case in Brazil.

Tobacco

The general and the specific factors that operate on the outlook for tobacco seem to indicate that United States exports in 1950 will not differ greatly from those in 1949, despite the dollar shortage.

From many points of view, tobacco is considered quite an essential product and has a high consumer priority that import policies cannot altogether ignore. Stocks in many foreign countries are low in relation to requirements, and ECA financing is an important factor in the movement of exports. Over a longer period ahead, general economic developments abroad will greatly influence United States tobacco export prospects. Alternative sources of supply should gradually yield larger quantities, under some stimulation of production there by the dollar-short importing countries. With respect to imports into Western Europe, tentative plans are to reduce, by 1952–53, takings from the United States. Although they may not fall below the prewar level, they will probably be well below the high shipments in 1945–46 and 1946–47.

Fruits

Within the framework of a smaller total dollar supply in the immediate future, fruits imported from hard-currency areas are liable to be classified as less essential items. Were it not for the special measures taken by the United States Government to maintain and increase exports of both fresh and dried fruits, the outlook for 1949-50 and 1950-51 would be bad indeed. The export subsidy in effect from October 1 and special arrangements made with the United Kingdom and Canada have assured a substantial movement in 1949-50 of United States export supplies of fresh apples, pears, and dried fruits. Citrus exports will profit from the removal of restrictions in Canada.

As to the more long-term tendencies inherent in the European economic situation, it must not be overlooked that the European countries will make every effort to cover their most essential fruit import needs from export supplies within the soft-currency area. Expansion of exports from Italy and other soft-currency countries, for example, is most probable.

Dairy Products

The United States position with respect to its foreign trade in dairy products continues to readjust itself in the direction of patterns for the prewar period. Further declines in exports are likely in 1950. Increases in foreign production have been substantial.

Some Salient Facts and Conclusions

If we want to have a measure of the precarious foundation on which United States export trade rests, we may look at the composition of the total dollar supply that goes to buy these exports. In 1948-49, dollar earnings of foreign countries paid for only about two-thirds of our exports. The remaining third the United States has largely given away. A very great expansion of American imports and other expenditures abroad would, therefore, be necessary to balance the accounts if our exports in general were to be maintained at present levels. Import needs of the United States are limited by the extent, variety, and development of its own resources. It is the world's most efficient industrial and agricultural producer. In such a position, it seems altogether improbable that this country should in the near future be willing and able to expand its imports on a vast and unparalleled scale.

It is true that, while a sufficient increase in American imports is improbable, *some* increase over a longer

period of time is likely and will contribute to relieving economic imbalance throughout the world. There should also be possibilities of encouraging travel abroad and expanding expenditure on other invisibles.

Certainly we must see the problem and do our utmost to help foreign countries to earn more dollars so that they may be able to buy and so that a large volume of world trade may contribute to the welfare of all nations. But we must be under no illusion about the realities since, with increases in many types of imports, a vested producer interest is adversely affected.

By and large, an increase in American imports does not depend upon the good will of the American people, but on economic, institutional, and political circumstances and social propensities—both in the United States and abroad—that are apt to change only slowly.

If we thus realize that a possible increase in United States imports and other expenditures abroad will neither rapidly nor fully alleviate the problem of imbalance in international economic relations, the alternative becomes clearly apparent: If exports are to be substantially maintained, United States aid to foreign countries through grants or loans or direct foreign investment will have to continue; or if this total outflow of funds is to be reduced, exports will likewise decline. This, after all, is almost commonplace. But the sooner the position is thoroughly understood and acted upon, the better will it be for the interest of the country. And the sooner will we all realize that each one of us has a stake in these big decisions of economic and political policy.



Report of the Cocoa Conference Held at Grosvenor House, London, 30th August-1st September 1949. Cocoa, Chocolate and Confectionery Alliance, Ltd., 25-28 Buckingham Gate, London, S. W. 1. 115 pp., illus. W. P. Griffith & Sons, Ltd., London, 1949.

This is a full record of proceedings at the fourth Cocoa Conference held in London under the sponsorship of the Cocoa, Chocolate and Confectionery Alliance. It presents all papers read at the sessions, all speeches, all discussion. In each session, attention was concentrated on one of several phases of cocoa production and distribution: World supply and demand, soil survey, research, disease and rehabilitation, and quality.

German Fair Features Better Farming



"It Can Be Done Differently" was the keynote of a special exhibit at the 1949 Central Agricultural Fair held recently in Bavaria. Sponsored by the Bavarian Government in cooperation with the U. S. High Commissioner for Germany, the U. S. Army, and the U. S. Department of Agriculture, the show featured modern techniques that save labor and increase output. An estimated quarter million visitors showed high interest in the exhibits, which included modern kitchens, poultry improvement, pasture improvement, land consolidation objectives, and agricultural extension methods.



German farmers showed great interest in the exhibits of lightweight farm machinery.



Some of the exhibits like these mounted on mobile trailers are now touring Germany.



Popular features of the fair were the exhibit and the photographs depicting farm life in the United States.

North China's Agricultural Taxation Policy*



In the past the outstanding feature of the Chinese communists' land policy has been the insistence on land reform—the redistribution of agricultural land and equipment in areas under their control. The communists have also insisted that equalization of wealth carries with it the responsibility of equalization of taxes. In some areas, it has been impossible to institute both programs at the same time. The tax policies now in force in North China reflect this situation.

As a result of the accelerated pace of events, the conquest of vast new agricultural areas, and the assumption of responsibility for large parts of the country, the communists have encountered two major problems. First, the newly acquired rural areas must be absorbed into the communist system under the doctrine of equalization, with all of its political implications. This change has not been possible in some areas of North China, owing to the pressing need for maximum food production. Land reform in the Peiping-Tientsin area, for example, has been postponed until the spring of 1950, under the slogan "Those who sow may reap," in order to avoid the production loss resulting from the breaking up of the farming units. A taxation system that places a heavier burden on the wealthier peasants has therefore been devised as a substitute measure. Second, the rural areas must be brought into proper relationship with the national economy. Under the pressure of civil war, carried on by the communists largely with resources drawn from the rural areas, taxes and levies of labor and supplies have increased to the extent that the peasant has been utterly impoverished. In the interests of encouraging full production and a return to a normal economy, some amelioration and particularly equalization of taxes is necessary.

The tax policy now in effect for areas where land reform has been accomplished takes into account relative productivity of land and defines the maximum and minimum taxes assessed. It is understood, how-

ever, that very often in these areas taxes have been levied on the basis of cultivated area rather than on production. This method of taxation penalizes the peasant with poorer land.

Type of Tax

The type of tax in use in areas where land reform has not taken place is "progressive". The Peiping area and many other sections of North China taken over by the communists in 1949 have this kind of tax.

The basis for the progressive tax is the "standard mou," which is defined as the area of land the normal annual yield of which would be 120 catties (132 pounds) of millet. Acreage is expressed for purposes of taxation in terms of the standard mou (1 mou = 0.16474 acres), the total estimated normal yield in millet of a particular peasant's land being divided by 120 to obtain the number of standard mou. Thus if the normal yield per measured mou is higher than 120 catties of millet (or some other crop when converted at the official rates) per year, a peasant might pay taxes on a higher number of mou than he actually possesses. The converse is also true. It would appear, however, that production of 120 catties per mou (800 pounds per acre) is very little above the average for marginal land, which means that the tax base is very low.

From the total number of standard mou obtained by this method of calculation, a certain amount is deducted for each person dependent on the land. This amount in the suburbs of Peiping is 1.5 standard mou (based on an average consumption per person of 180 catties (198 pounds) of millet, or 6 months' minimum requirement). The balance in standard mou is multiplied by a rate of taxation in terms of millet to obtain the amount of tax. The formula for the total tax is as follows:

Total normal annual yield (estimated) divided by 120 less the number of persons dependent on the land multiplied by 1.5, divided by number of persons dependent on the land, multiplied by the applicable progressive tax rate.

There are 5 grades of tax, ranging from 10 catties

*Based on Foreign Service reports.

(11 pounds) per taxable mou (total standard mou less deductions), under a total of 5, to 26–30 (28–33 pounds) catties per taxable mou over a total of 21. The rate rises steeply above 15 mou (2.47 acres), the fifth grade being almost double the third.

The highly progressive nature of this tax is significant, as the tax is applicable only to newly “liberated” areas where land reform has not been carried out. In general, for the North China area, 20 mou (3.29 acres) of medium land (150 catties per mou—1,003 pounds per acre—of millet per year normal production) is the marginal unit for independent agricultural management. This is the amount of land necessary to furnish a minimum standard of living for a family of five and the maximum area that can be cultivated by the labor of the family. Those peasants cultivating under 20 mou (3.29 acres) on the average can be classified as “poor” peasants, those cultivating between 20 and 50 mou (3.29–8.24 acres) as “middle” peasants, and those having more than 50 mou (8.24 acres) as “rich” peasants.

It would therefore appear that in general the progressive tax policy aims at dealing very leniently with the poor peasant and farm laborer classes, while imposing the greatest burden on “rich” peasants. The tax for rich peasants is probably 20 percent on gross normal yield. In addition, services are often required

in support of various public projects. But these are equal for all classes. The progressive tax therefore appears to be only an expression of the official land-reform policy, antecedent to and in lieu of land reform itself.

The most important development in tax policy, in view of the possibility of its adoption for long-term use, is the so-called nonprogressive tax, which is designed for use in areas where land reform has taken place. Its features are the same as for the progressive tax except that one rate of taxation is substituted for the scale of tax rates, that the standard mou is 150 catties of millet rather than 120, and that exemptions for draft animals are provided.

The rate of taxation is 25 catties (27.5 pounds) of millet per taxable mou. A scale is not required, since after land reform the peasants presumably possess relatively equal amounts of land and property. The use of the standard mou, as defined above, in theory assures that taxation will be according to the ability of the land to produce and that the peasant with poorer land will pay less tax. The principle of equality exemplified by the land reform is thus carried a step further.

The advantages of the nonprogressive tax, according to newspaper statements, are as follows:

- (1) The tax burden is based on a fixed “normal



Farm women grinding corn in a village of North China.

production," and a harvest over the fixed amount is not assessed, though a subnormal amount would ordinarily lead to no reduction of tax. This is "intended to encourage production."

(2) The tax burden is equalized by a fair and correct assessment of normal yield.

(3) The tax is rational and easily calculated, so that everyone knows what the annual tax burden will be.

It is the stated intention of the authorities that this tax should be the only direct tax paid by the peasant each year. Local taxes not exceeding 5 catties per mou (5.5 pounds per 0.16474 acres) may be collected, however, subject in North China to the approval of the Government.

Tax is not to be levied on farmyards or land upon which houses are constructed, roads, forests, wasteland, experimental farms, land lying fallow under a rotation policy, and similar areas. Land having an increased normal yield because of improvements, such as irrigation, will not be reassessed in terms of standard mou until the fourth year after improvement.

Economic crops (cotton, peanuts, tobacco, and such) will apparently be taxed in terms of standard mou. Favorable rates of conversion into millet for tax-paying purposes, however, are obviously intended to encourage peasants to raise these crops.

In general the exemptions described above are to be granted to persons, including hired laborers or self-supporting students, living or dependent on the farm for a living. Committees assessing the tax are directed to make appropriate deductions from the exemptions for persons earning part of their living from industry and commerce. Exemptions for draft animals are provided with a view to encouraging the increase of such animals, which are now in very short supply in the country districts.

Taxes may be collected in wheat and millet and some of them in other grains, cash, cotton, firewood, fodder, or clothing.

Determination of Tax

The task of fixing the number of standard mou, as a basis for determining the amount of tax payable, rests with the village governments. The steps by which the tax is determined are as follows:

(1) The village government appoints literate persons to assist the peasants to fill in the agricultural tax register, which includes information about the number of dependents and draft animals, land held, normal yield, other income, and the number of taxable mou.

(2) An agricultural tax survey and assessment committee is then formed and charged with the duty of examining the register "in a democratic manner" and making corrections.

(3) When this is done the village government should display the results, after which any peasant may petition for reexamination by the committee. If after reexamination the petitioner remains dissatisfied, he may apply to the hsien (county) government, which should send a representative to settle the matter.

(4) The village government then transmits the tax register to the hsien or district government. If any incorrect assessments should be discovered at this level the district and village form a joint committee to re-survey and reassess the tax.

(5) When the hsien government is satisfied with the survey and assessment, two copies of the agricultural register are made for submission to the administrative area office or provincial government and to the North China People's Government.

(6) After consideration and approval by the North China People's Government the number of standard mou for the entire hsien is fixed. No change will be made except for land improvement or changed natural conditions. In the event of poor crops due to flood, drought, hail, insects, and such, the hsien government is permitted to make a survey and report to the North China People's Government, giving the details and requesting postponement or reduction of tax or exemption therefrom.

There is no clear indication whether changes in taxable mou and in standard mou must be submitted to the North China People's Government for approval. If so, it would appear that the entire process of assessing and obtaining approval of the tax would be an annual task. In any case, this procedure would necessarily occupy several officials at various levels.

The high rate of taxation would of course intensify the natural clash of interests between the village government, which is primarily responsible for the assessment, and the higher echelons, which stand to benefit most.

The provision that the agricultural tax is to be the only direct tax levied on the peasant each year is obviously intended to reconcile him to the heavy burden that it imposes. It also implies the cessation of "voluntary" contributions to the front, conscripted labor, and the like. It of course remains to be seen whether the idea is carried through, with all of its implications, and whether the villages will accept the tax and assess it in good faith.

Native Feedstuffs Developed By Guatemalan Research

by ROBERT L. SQUIBB



Tropical plants native to Guatemala are being converted into balanced rations for both animals and poultry as a result of findings by the research laboratories of the Guatemalan Instituto Agropecuario Nacional. Although findings are incomplete, the low cost of these indigenous feedstuffs and a rapidly expanding market for quality products are attracting many Guatemalan farmers to the poultry business.

The Instituto's search for little known feedstuffs with a high protein and vitamin content serves a two-fold purpose. First, those plants that prove valuable and can be found in quantity will help to supply a world need for proteinaceous feedstuffs. Second, commercial production of these feeds will provide a new source of wealth for Guatemala and neighboring countries.

The Instituto, a cooperative research organization of the Guatemalan Ministry of Agriculture and the United States Department of Agriculture, believes that a desirable protein ration for animals and poultry can be compounded of feedstuffs that do not compete with human needs. Animals can convert such nonhuman foods as roughages, nut meals, and other byproducts into milk, meat, and eggs—essential items of the human diet.

The research work on native feedstuffs—a project of the Animal Husbandry Department of the Instituto—is handled from three approaches, only two of which are in operation at present. A biological and chemical assay is made of the tropical plants, followed by controlled feeding trials with swine. Then the determination of the digestibility of the ration is made with sheep. This last phase of the experiment is not as yet in operation. A recent test of 18 Duroc Jersey pigs fed rations with a protein content of corozo palm

nut oil, sesame, and corozo-sesame combinations indicates that livestock production can be substantially increased by the use of indigenous feedstuffs.

A nutrition laboratory, with equipment capable of handling 400 rats and 600 baby chicks, is completed and in operation. The baby-chick unit is already operating at capacity, with 2 flocks of chickens in production, from which 400 eggs are incubated each week. Weekly incubation yields important data on hatchability and at the same time makes chicks available in sufficient numbers to fulfill the requirements of accurate biological experimentation and statistical control.

These biological assays with baby chicks are showing that the Tropics do have an abundant supply of nutritious feedstuffs. A meal made of a member of the genus *desmodium* may replace alfalfa in baby-chick and laying mash in Guatemala. In a group of trials, no differences were noted between the growth rate of chicks fed a freshly prepared United States alfalfa



The Instituto's 2,400-egg incubator.

Dr. Squibb is Animal Husbandman, Instituto Agropecuario Nacional, Guatemala City, Guatemala.

This article was made possible by funds provided through the United States Interdepartmental Committee on Scientific and Cultural Cooperation of the Department of State.



The grass around this laying house is Kikuyu, highly palatable to chickens.

meal with their basic feed and those fed desmodium meal in their basic diet. Cow manure is also proving to be a valuable source of essential nutrients for the diets of chicks.

For many years, Guatemala has depended on its own farmers for eggs and poultry meat. Recently, the expanding markets for these products have increased the number of poultry farms operating in the country. But chicken raisers have been plagued by numerous problems. Due to the lack of control over the collection of eggs, distances to markets, and the tropical climate, eggs deteriorate rapidly. Malnutrition, poor sanitation, and disease cut down chicken production especially when large numbers of birds are concentrated in small areas.

While the Instituto is experimenting to overcome these problems, the Government is facilitating the importation of large numbers of purebred birds from the United States. Chicks are flown to their Central American destinations within a few hours, usually arriving in excellent condition.

In the past, Guatemalan poultrymen have had almost no information on the importance of a balanced diet for their flocks. Many farmers have attempted to raise chicks solely on ground yellow corn with some chopped greens. This has led to severe malnutrition and resultant poultry losses.

Realizing the futility of such a system, a number of poultrymen have been importing from the United States high-grade chick-starting mashers. In many cases even these imported mashers have failed, when their vitamin A content was lost due to adverse conditions in transit. The new indigenous feeds being developed by the Instituto Agropecuario Nacional mean substantial savings to poultrymen in smaller feed bills.

High school and agricultural students, nurses, and doctors have shown widespread interest in the nutritional experiments of the Instituto. But the farmers of Guatemala are the most interested observers, for the successful introduction of indigenous feedstuffs can mean increased production of high-grade animals and poultry at lower cost. If the problem of malnutrition is solved by properly balanced feed, it is hoped that the problems of disease and poor sanitation will soon be answered in the use of oil sprays, wettable DDT combinations, and other modern methods. Despite incomplete data, farmers are already using the findings of the researchers, on the theory that some improvement is better than none at all.

As the animal and poultry industry is strengthened, Guatemalans will find more protein foods appearing on their daily menus. Higher quality at lower cost will characterize these products—the result of chemical research and field experimentation.

Giant African Snails

By SHIRLEY BRUBAKER

United States scientists are getting control methods ready for a new potential menace to agriculture, the giant African snail. From its home on the island of Madagascar and the southern and eastern coasts of Africa's mainland, the giant African snail (*Achatina fulica*) has made a bold march eastward since 1847. Until that time, and from their earliest detection in 1803, these large mollusks had remained in Africa where the natives ate them and used their shells for ornaments. Then a British collector found the creatures a curiosity and took some specimens to India. Although the Africans had considered snail stew and other *Achatina* concoctions a delicacy, the Indians did not have an appetite for such dishes, and the snails multiplied. Their move to India was the beginning of their pilgrimage across half the world. By 1900, tea plantations in Malaya were being invaded. In 1930 Singapore inhabitants were battling the new immigrants and so were the southern Chinese in 1931. Java and Siam, 1935 and 1937, respectively, found the newcomer a nuisance. Recently the snails have appeared in Hawaii in small numbers.

The growing infestation is of direct interest to the United States because of the program now in progress whereby between 500,000 and 1,000,000 tons of salvaged war materials will be returned to California and other United States ports from infested areas of Hawaii, the Philippines, and Micronesia. The giant African land snails, having hitch-hiking dispositions, sometimes attach themselves to the scrap iron and

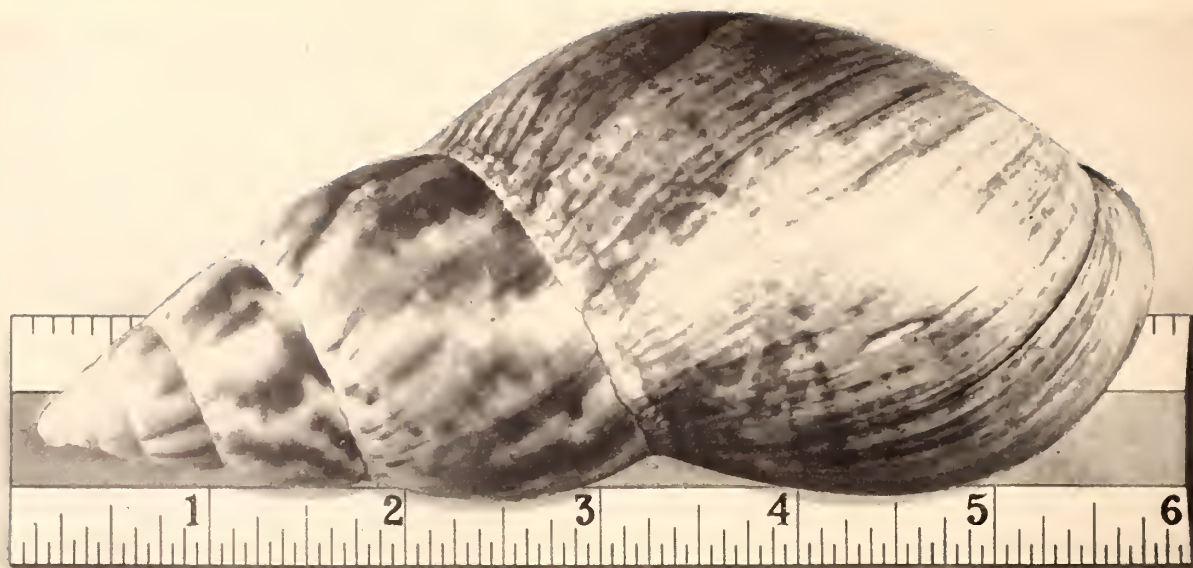
other material and come across the Pacific and often through the Panama Canal to United States ports. It is yet undeterminable, however, whether the *Achatina* will be able to acclimate itself to our temperate region where ground temperatures sometimes get very low for comparatively long periods.

The United States Bureau of Entomology and Plant Quarantine has no evidence that the giant snails have become established in the continental United States. There is at present no catch-all Federal law or postal regulation to provide for examination of shipments. However, importers and exporters, as well as plant quarantine inspectors of the Bureau of Entomology and Plant Quarantine and those of the interested States, are constantly on the watch for contaminated shipments. When eggs of estivating adults are found during inspection of imported materials, safeguards believed to be effective are promptly applied. The United States Government needs legislation that would broaden the Insect-Pest Act of 1905 to include such plant pests as snails, mites, and ticks. Until the desired legislation is secured, cooperative inspection and safeguarding of shipments will be continued.

The shell of the giant measures approximately 6 inches in length and is as big around as a man's fist. With its body extended, the entire mollusk reaches the 9-inch mark. When in the seclusion of its shell the invertebrate giant presents a pretty picture, for its pyramidal outer casement is splotted with mixtures of quiet purples, greens, pinks, browns, and whites. On the other hand, when the snail extends its granulous face the picture is no longer a pretty one, for out come two pairs of feelers, a pair of short tentacles, and two larger ones tipped with large bulbous eyes. The



When its body is extended, the giant African snail measures nearly 9 inches.



A shell of the giant African snail. In the past century, this pest has spread from Africa halfway around the world.

larger tentacles, which are fleshy, constantly sway from side to side and change in length. When the mollusk opens its jaw, a set of 80,000 tiny teeth crowned with pointed hooks makes the picture even more unpleasant.

Giant African snails are robust individuals, able to withstand almost any sort of adverse condition of food and moisture. Their large livers can store enough energy to allow them to survive long periods of fasting. They can undergo prolonged periods of food shortage by burying themselves in the ground, secreting a limy albuminous protection around their shell, and remaining motionless for months at a time. During cold spells or to protect themselves from parasites, the snails can seal themselves off and cement themselves tightly to some object with the aid of the same limy substance.

These snails are very nearly living garbage cans—they will eat anything in a garden and have a special fondness for rotten vegetation and fruits. They are especially fond of lime, this being a source of the calcium that is essential to the snails' growth and self-protection. Also on their list of dietary favorites are humus, excrement, tender pieces of bark, and even crushed individuals of their own species. Because of their strong protective devices and their varied diet, giant African snails may live for several years.

Each individual in the *Achatina fulica* family is an egg producer, for each individual is a true hermaphro-

dite with a single gland that produces simultaneously both male and female sex cells. An individual may lay up to 300 eggs in one batch and these hatch in only a few hours. During rainy periods, this operation may be repeated every 2 weeks. Mathematically, and the figure is said to be a conservative one, a single gravid individual could be solely responsible in a 5-year period for a possible population of nearly 11 billion snails.

Offhand, it seems odd that *Achatina fulica* survived for so many years in Africa comparatively unnoticed by the world and that only recently has it become a threat to the world's farmers. One important reason is that the Africans, the Japanese, and some Chinese regard snails as suitable human food and eat enough of them to keep them from becoming a pronounced menace. Since this exotic food does not seem to appeal to the rest of the world, however, a biological balance does not always exist and in such cases the snails multiply and become a threat to agriculture.

The best defense of the United States against *Achatina fulica* is to keep this snail from establishing itself on the mainland of this country. So far the Bureau of Entomology and Plant Quarantine has been successful. The infested salvaged war materials coming from the Trust Territory are either fumigated on the ships or unloaded and treated extensively with live steam under great pressure. Fumigation of one such ship carrying 8,000 tons of snail-infested cargo to the harbor at Baltimore, Md., recently cost the importers of these materials, who cooperated with the people of the United States in this matter, \$22,500.

Mrs. Brubaker is Junior Editor, Division of Foreign Agricultural Information, OFAR.

New Zealand Phormium Fiber

by HOWARD J. CRITCHFIELD



Phormium tenax—variously called phormium flax, native flax, New Zealand flax, and New Zealand hemp—is one of few useful plants native to New Zealand. It is the only commercial hard fiber that thrives in middle latitude climates and is the source of a hard-fiber product that may be classed with sisal or abaca with respect to its use.

Low production keeps phormium from being one of the world's major fibers. Yet in the past it was an important export of New Zealand, and the industry appears to be on the verge of revival.

Commercial production of phormium and export of the fiber began in the early 1800's. Because the industry depended on the exploitation of natural growth, however, output had decreased markedly by the beginning of the twentieth century and dropped to almost nothing after World War I. Although the industry has revived somewhat since 1930, there has been an increasing domestic use of phormium fiber and none has been exported since 1942.

As a fiber crop, phormium has several advantages. It has a high percentage of fiber in the leaf—10 to 12 percent as contrasted to 2 to 3 percent for sisal. Phormium has long leaves and long fibers. It can be easily propagated from roots, and one planting produces for many years. Attempts to improve on the natural supply have been directed along two lines. The first is the drainage of swamps to provide a more suitable environment for the plants to spread in what is called an induced phormium swamp. The second is the establishment of plantations either through the transplanting of divided rootstocks or of seedlings. Plantations have been established only recently, but induced phormium swamps were being created in the last century by simple drainage systems.

At present there are only three phormium plantations in New Zealand. One in Southland of about 1,000 acres is situated largely on hilly land. The others, on the North Island, are an area at Kaingaroa in Northland and the Government-owned Moutoa estate of about 5,000 acres of combined planted and

induced swamp on the Manawatu River near Foxton. Associated with the latter is a team of botanists of the New Zealand Department of Scientific and Industrial Research, who are carrying out breeding and growing experiments to develop strains that are disease resistant and have greater fiber strength and durability. On the same estate the New Zealand Department of Agriculture is testing cultivating and harvesting methods with a view to more economic production.

In the establishment of plantations, propagation of the plant by root division has been widely employed



Two-year-old phormium plants.



Cutting phormium. The bundles of green leaf weigh about 70 pounds.

Mr. Critchfield is visiting lecturer in geography, Canterbury University, Christchurch, New Zealand.

since by this method the qualities of the individual varieties are maintained. In general, it takes 5 to 6 years to get a satisfactory crop of leaf from such a field, whereas 7 or 8 years are needed to produce a comparable crop from seeds. After the first harvest in either case, subsequent crops can be taken about every 4 to 6 years depending on local soil and climatic conditions. Planting is done preferably in the spring from August to November on land that has been plowed and weeded. Rows are usually 8 feet apart with the plants spaced at 4-foot intervals in the row. Periodic cultivation between the rows during the first 18 to 20 months keeps down weeds and gives the plants a vigorous start.

In actual practice the harvesting procedure for planted, induced, and natural phormium is the same. Most of the work is done on a contract basis. Cutting may take place in any month but most of it is done in summer. The leaves are cut with a curved hand sickle and tied into bundles weighing approximately 70 pounds. Tram lines or roads are laid out at convenient intervals in the field for transporting the bundles to the stripping mill. On the average, 30 tons of green leaf per acre is considered a good yield. Approximately 8 tons of green leaf provides 1 ton of fiber.

Stripping is the first step in processing the fiber. The leaves are fed by hand onto a decorticating drum. Stripping mills were operating in 15 locations in New Zealand in the 1948-49 season. After being stripped, the fiber is washed and drained. When the hanks are fairly dry, they are hauled to the bleaching fields for exposure to the sun and weather. After a period of bleaching and drying, the fiber is scutched (separated from the nonfibrous material) and the strands are polished. Short and rough fibers removed in this process are reclaimed as tow. After scutching, the fiber is pressed into 400-pound bales.

The common uses of phormium are in the making of woolpacks, matting, binder twine, and lashing. In the latter, phormium and sisal are often combined. Phormium is also used in smaller quantities as a binder in plaster, in paper manufacture, mattress and upholstery stuffing, and occasionally in rope either alone or in combination with Manila hemp. Ordinarily the byproduct tow is used in woolpacks and in products where strength is of secondary importance. About 50 percent of the postwar production of phormium fiber has been manufactured into woolpacks. The Dominion's requirements of woolpacks is about 1 million packs annually, of which only a third are made from phormium.

The phormium industry is faced with several problems. One of the chief drawbacks to establishment of phormium plantations has been the long harvesting cycle. Few individual farmers feel that they can risk the capital investment required to put in a crop from which there will be no return for at least 5 years. The New Zealand Government has guaranteed the purchase of all phormium produced between 1948 and 1958, thus assuring a market for two crops from plantation enterprises.

A perplexing problem confronting the phormium industry is yellow-leaf disease, which is characterized by yellowing leaves and eventual death of the plant. Research to determine a method of controlling yellow-leaf disease as well as the moths whose larvae eat the leaves is an important factor in the development of the industry. In addition the desirability of breeding and selection to produce disease-resistant varieties in combination with the highest quality and quantity of fiber is obvious. Because of the long harvest cycle and the instability of the phormium industry, there has been a lack of continuity in past decades in all phases of research and experimentation related to phormium. The establishment of the Moutoa research plantation near Foxton may well mark the beginning of a stabilized native hard-fiber industry.

The processing of phormium fiber is not yet per-



Woolpack cloth made from phormium fiber. About half of the phormium-fiber crop goes into woolpacks.



Phormium fiber, stripped and washed, is hung on poles to drain.

fected. Especially needed is a stripping machine that can clean the fiber without weakening it. There is little doubt that if sufficient supplies of leaf were available, a mechanical cutter could be developed to reduce the harvesting cost.

At present, New Zealand is only about 15 percent self-sufficient in meeting its hard-fiber needs. Whether production can be increased to meet domestic requirements, with perhaps a return to a significant export trade, depends on a long-term stabilization of the industry through solution of these fundamental problems.

Dollar Gap in Review

Of particular interest in understanding the problem of foreign markets for United States farm products is the following excerpt from the *Report of the ECA-Commerce Mission* recently published by the European Cooperation Administration.

"While the dangerous implications of the dollar gap are only now beginning to be fully revealed, the gap has a history stretching back some thirty-five years. A brief look at that history will help to put the problem in its setting.

"From July 1914 through 1948 the United States exported goods and services to a value of \$270 billion and imported goods and services to a value of only \$169 billion. Thus we exported \$101 billion more than we imported over this period.

"This period witnessed a transformation of the world, and a transformation, too, of the role of the United States economy in the world. We entered World War I a debtor country and emerged a creditor country. During World War II our industrial pro-

duction outstripped that of all Europe, excluding the USSR.

"Much of our export surplus of \$101 billion, of course, occurred in time of war. If we omit the years 1914-18 and 1941-45, our total exports were \$170 billion, our total imports \$118 billion, and our export surplus \$52 billion. Of this last amount, \$11.5 billion occurred in 1919-22, immediately after World War I; slightly more than \$7.5 billion in 1923-29; slightly less than \$7.5 billion in the 11 years, 1930-40; and about \$25.5 billion in 1946-48.

"If the goods and services we sold abroad from 1914 through 1948 so much exceeded the goods and services we imported, how was the difference paid for? The answer, subject to errors, duplications, and omissions on the available data, is as follows: A rather steady stream of private remittance—donations—accounted in a perfectly normal way for about \$10.5 billion, or one-tenth of the total excess of \$101 billion. The flow of long- and short-term private capital abroad, heavily concentrated in the 1920's, accounted for another \$10.5 billion more or less. In addition, foreigners had to send us gold and liquidate their holdings of dollar assets to an aggregate amount exceeding \$15.5 billion. Recently the International Monetary Fund and the International Bank for Reconstruction and Development have contributed more than \$1 billion.

"Finally, the vast sum of nearly \$68 billion was provided over this whole period by the United States Government. Of this total, \$49 billion took the form of grants, almost all made since 1941, while \$19 billion were designated loans. The loans were somewhat more heavily emphasized in 1914-22 than in 1941-48.

"It will be seen that the difference between our exports and our imports (of goods and services) averaged nearly \$3 billion a year over the 35-year period, war years included. In 1946, however, our export surplus was \$7.8 billion; in 1947 it ran to \$11.3 billion; in 1948 it was \$6.3 billion.

³ The amount of 'compensatory official financing' provides a somewhat more refined measure of the dollar gap than the commonly cited balance on goods and services account, which has been used in this report. Since the former makes allowance for net amounts of private donations, private capital movements, government aid extended for special reasons unconnected with balance of payments considerations, and errors and omissions in the data, it will generally differ one way or the other from the export or import surplus, although the difference will not necessarily be great. In the U. S. balance, the 'compensatory official financing' was \$7.4 billion in 1946, \$11.3 billion in 1947, and \$6.6 billion in 1948."

Lebanese Farmers Adopt New Agricultural Practices

by MARIE PUHR



Putting the results of research into practical use on the farm is not always easy even in the United States with its highly efficient extension service. In countries like Lebanon that have no such organization, getting this information to farmers is more difficult. But when I was there last summer, I found that new methods are reaching its farmers—through students who have studied at home and abroad and through such organizations as the Near East Foundation and the American University of Beirut. Lebanese farmers are eager to learn and are rapidly adopting up-to-date agricultural methods.

Lebanon is a country of contrasts, with deep valleys and high mountains that border the sea. In agricultural practices there are also contrasts—the old intermingles with the new. Tractors are in operation in some fields. Nearby, farmers use tools that have come down from Biblical times. Modern trucks speed along the highways past donkeys and camel caravans.

About three-fourths of the country's 1.5 million people are engaged in agriculture. The 1,000 square

miles of cultivated land in this small country, which skirts the eastern shore of the Mediterranean, present a diversified agriculture.

Along the coast there are banana, olive, and citrus groves and vegetables. On the neatly terraced mountainsides, fruits are grown. Crossing over the Lebanon Mountains into the Bekaa Valley, one finds grain, mostly wheat and barley. Other crops are dry legumes, such as beans, lentils, chickpeas, and vetches. Sesame is grown and is a source of vegetable oil, supplementing olive oil, which is commonly used in cooking. Grapes are found in most parts of the country as well as figs. Apple and pear orchards are on the higher mountain slopes. On the sandy soil, delicious melons are grown. The livestock seems to be mostly cattle, fat-tailed sheep, and goats.

Tobacco, of the Turkish variety, is an important crop in some areas. I saw it being dried out of doors stretched over wires or cord. This is possible because of the absence of rain during the summer.

The silk industry, once important, has declined with competition from Japan and the coming of rayon and nylon. In many places, banana groves have replaced mulberry trees.

Land in Lebanon has been cultivated for thousands of years. The cultivation has been mostly with hand implements, and it is usual to see an entire family working together especially at harvesttime. The hand sickle, the threshing sled, the nail plow, the pickax, and other similar hand tools are used. While combines and tractors operate in a few areas, most of the threshing I saw involved pulling a sled either by oxen or horses over the grain and then tossing it into the air with a winnowing fork and letting the wind separate the chaff from the grain. In the Bekaa Valley, however, I saw hand fanning machines used for this purpose.



Farmers in Abadiyeh use sure-footed donkeys to carry fruits and vegetables grown on terraced mountainsides to their cooperative in the village, where products are assembled and hauled by truck to Beirut.

Miss Puhrl is Information Specialist, Farm Credit Administration.

Last summer Miss Puhrl attended a seminar at the American University of Beirut, Lebanon, on Arab life and culture and traveled in Lebanon and Syria. Her article on the Abadiyeh Agricultural Cooperative appeared in *NEWS FOR FARMER COOPERATIVES*, December 1949.



The small leaves of the aromatic Turkish-type tobacco grown in Lebanon are cured by hanging outside during Lebanon's dry months.

Farmers live in villages and carry on many of their activities in rather close cooperation with their neighbors. Their farming practices have come to them through a rich heritage of the past and are closely intermingled with their religion. The people are intelligent and forthright, and it has been shown that when they learn about better practices they are likely to adopt them.

Farms are small. On the average, a farmer in the mountain area owns no more than 3 to 5 acres, which are intensively cultivated. These mountain farmers maintain a relatively high standard of living from the produce of their few acres often supplemented by remittances from emigrants abroad. Yet many farmers have found that they can improve their yields by using up-to-date practices, such as fertilizers, insect controls, and better seeds.

I visited several villages where new farming methods have been adopted. An outstanding example is the village of Abadiyeh. Here, one of the farmers had studied in France and learned many modern agricultural practices. His uncle had studied agriculture in the United States. One of the things that they learned about and transplanted to their own land was cooperation in marketing farm products and purchasing farm supplies.

The Abadiyeh cooperative is bringing to its 185 members and the other people of the village many new and better farm practices—the use of insecticides and commercial fertilizer, for example. When the cooperative introduced insecticides, many farmers had never used them, but they were eager to learn. And

soon pests were being controlled on all farms by up-to-date methods. Commercial fertilizer, too, is now in general use in the village farming area.

The cooperative's principal activity is marketing fruits and vegetables for its members. Previously a farmer had to take his produce to Beirut, some 10 miles away, by donkeyback or pay a high price to have a truck stop to pick it up. Often perishable products spoiled before they could be sent to market or during the haul on donkeyback. Now farmers deliver fruits and vegetables to the cooperative when they return to the village from their fields in the evening. The next morning the cooperative's truck carries the load to the Beirut wholesale market where it is sold. The members are paid four times a month.

The fruits and vegetables are graded and packed in the field in a special crate, developed by the cooperative, that has a cover that slips firmly into place without nailing. This makes packing easy. It also facilitates grade inspection at the cooperative. The grading by the members of the cooperative is so highly regarded at the Beirut market that no regrading is done.

A big part of the cooperative's business consists of buying for its members supplies, such as insecticides and fertilizer, and tools needed in cultivating the land. Another important job is supplying credit to members. In contrast to the 15-percent to 25-percent interest charged for loans in the village the cooperative's rate is 5 percent for production purposes.

The cooperative sponsors an agricultural fair. Last year the Minister of Agriculture for Lebanon was the



Old and new ways are always meeting in Beirut, the largest city in Lebanon. A shepherd takes a day to drive a flock of sheep to Beirut from the nearby mountains along a road that modern trucks cover in less than half an hour.

principal speaker. Prizes were awarded for the best fruits and vegetables that the farmers displayed.

Another place where I saw a project of great value to farmers was in the Bekaa Valley. This Valley, once one of the granaries of the Roman Empire, was cut off from much of the country for centuries because of the mountains on both sides. Now there are modern roads over the mountains to Beirut and Damascus. Trucks and automobiles speed past villages where farmers are still using practices that have come down to them from the remote past, yet many farmers are using these ancient methods because they do not know about better ones.

In at least one of the villages, Marj, a new "know how" has been brought to the people by the Near East Foundation. Here, I visited the headquarters building of the Foundation, which houses a clinic. The strides taken in a few years' time have made the village a healthier, happier, and more sanitary place to live. The people are better fed because they are producing more food.

An agricultural agent lives in the village and farms with the people. In this way, he is able to bring to them better practices. His farm is really a demonstration area for, as he says, "seeing is believing." For example, he used fertilizer on his grain land. When

farmers with adjoining acres saw the grain develop into a better crop with larger yields, they asked about it and were told about the magic of plant food. The next year, 75 percent of them used fertilizer.

In the Bekaa Valley, new power pumps are facilitating irrigation that has been carried on for centuries. Hundreds of acres of tomatoes, potatoes, onions, and other crops are flourishing here. The villagers at first were skeptical about getting underground water. After they saw a few pumps operating, however, it was not long before 20 companies were formed and 300 power pumps were in use.

A health program has reduced the malaria rate from 95 percent to less than 5 percent. This was accomplished simply by spraying ditches and homes with DDT and using certain other sanitation methods.

A group health program has also been developed. The people of the village now have the services of a doctor at reasonable cost. On certain days he comes to the clinic where members get free service. For calls to the home, however, there is a small charge. A new program, that of teaching midwives better practices, has resulted in a lower infant-mortality rate, and children in the village are healthier too.

In other ways also the village has advanced. To train leaders to carry on a program among their own people, a boys' club was formed. It now has a club

room and a library of agricultural books. This club sponsors such activities as plays and movies, which have become an important part of the villagers' lives.

Since Lebanon has such a diversified agriculture and is such a small country, it is extremely difficult to carry on all the research necessary to meet its varied needs. Lebanese are aware of the sources of information on methods and practices already developed in other countries and are adapting them to conditions in their own country.

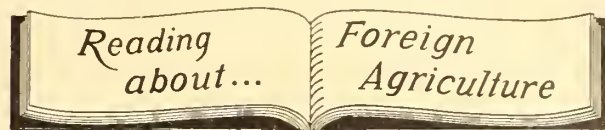
INTERNATIONAL *Agricultural News*

Finland's Pellervo Society Has Fiftieth Birthday

The Pellervo Society, central organization of Finland's agricultural cooperatives, recently celebrated its fiftieth anniversary.

The day-long ceremonies began with a tribute to Professor Hannes Gebhard, the Society's founder, and included addresses by the President of Finland and other officials and music and folk dancing.

The Pellervo Society was organized at the turn of the century to promote cooperation among farmers. One of its first achievements was the passing of the Co-operation Act, in 1901, which accelerated the cooperative movement in Finland. Today the cooperative stores, credit societies, dairies, slaughterhouses, and many others are an important part of the Finnish economy.



Vegetable Gums and Resins, by F. N. Howes. Vol. 20 of New Series of Plant Science Books, Frans Verdoorn, ed. 188 pp., illus. Waltham, Mass.: The Chronica Botanica Co., and New York: Stechert-Hafner, Inc., 1949. \$5.

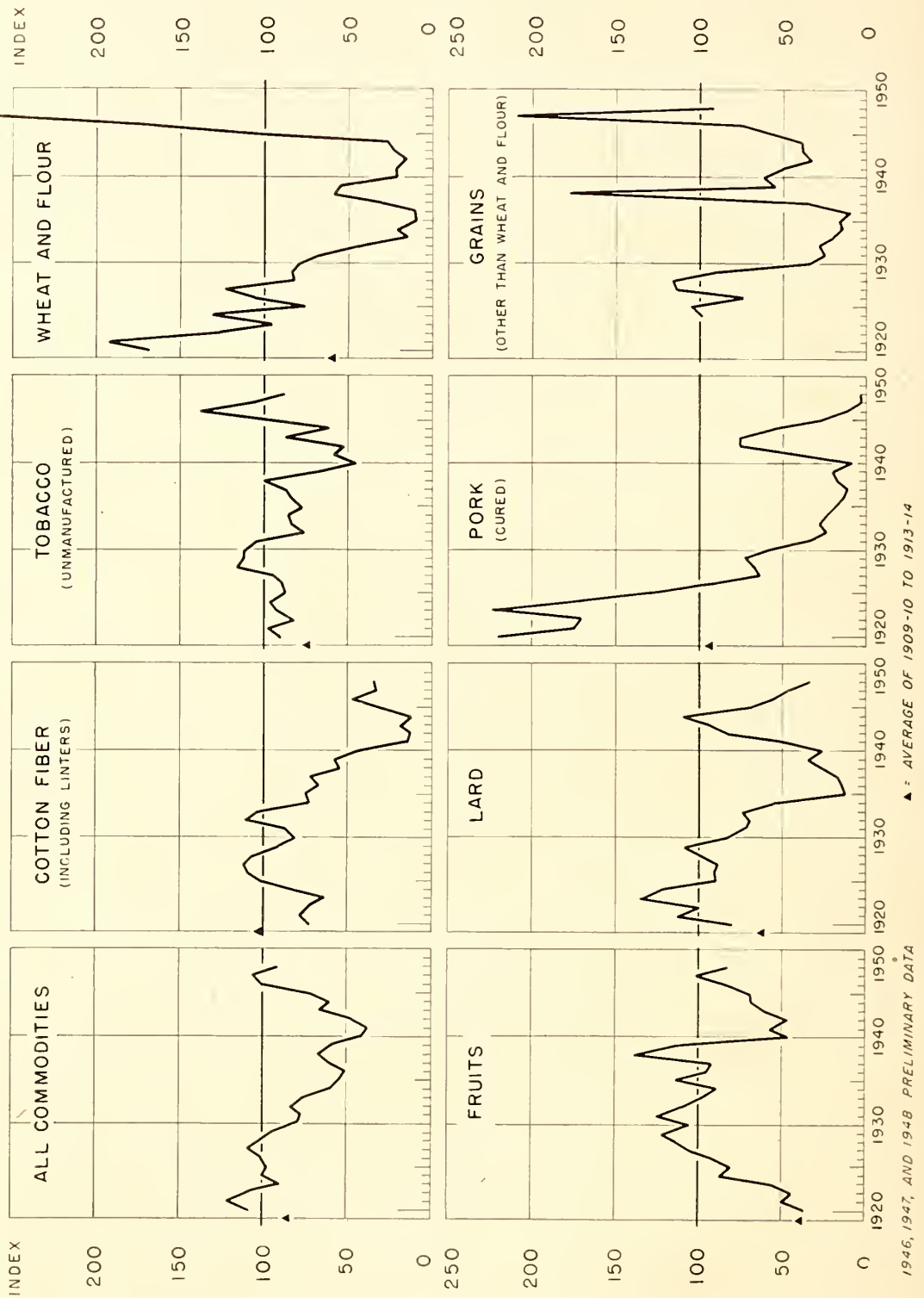
The author is curator of the Museum of Economic Botany of the Royal Botanic Gardens at Kew. From the thousands of gums and resins, he has selected those with commercial importance, emphasizing those that have only recently become important and are not included in older works. Though he approaches his subject from the botanist's point of view, he presents the industrial development in the different countries and tells the history of the trade.



Veterans of the Pellervo Society receive citations for their work in Finland's agricultural cooperative movement.

QUANTITY INDEX OF UNITED STATES AGRICULTURAL EXPORTS

INDEX NUMBERS (1924-29=100)



1946, 1947, AND 1948 PRELIMINARY DATA